

## CLAIMS

1. Device for dislodging and recovering dredging material of varying nature, comprising a bearing housing, a drive shaft mounted therein for rotatingly driving with a determined torque a cutter head with a support ring, which cutter head is mountable on the drive shaft via a hub, and a suction pipe which can be connected to a suction mouth which is surrounded by a fixed cutter shield which fills the space between the rotating support ring on the one side and the suction mouth and the bearing housing on the other, **characterized in that** a number of cutter heads with a different support ring diameter can be mounted on the drive shaft, wherein the support ring diameter is determined by the torque and the nature of the dredging material to be recovered.

2. Device as claimed in claim 1, **characterized in that** a number of suction mouths with a different entry section can be connected to the suction pipe, wherein the entry section is determined by the nature of the dredging material to be recovered.

3. Device as claimed in claim 2, **characterized in that** the dimensions of the suction mouth are adapted such that in the operative position the bottom end fits closely between the cutter shield and the support ring of the associated cutter head.

4. Device as claimed in either of the claims 2-3, wherein the device further comprises a cutter ladder, **characterized in that** a number of cutter shields can be mounted on the cutter ladder which, during use of different cutter head/suction mouth combinations, allow the cutter shield to be connected on one side to the edge of the bearing housing and the suction mouth and on the other side to the

inner edge of the support ring and the front end of the cutter ladder.

5. Device as claimed in any of the claims 2-4, wherein the cutter shield takes the form at the bottom of a truncated cone in the direction of the cutter head, **characterized in** **that** the smaller the support ring diameter of the cutter head to be mounted, the greater is the angle of opening of the truncated cone of the cutter shield to be mounted.

6. Device as claimed in any of the foregoing claims, **characterized in that** at least one nozzle is provided for spraying a fluid under high pressure into the dredging material cut into by the cutter head.

7. Device as claimed in claim 6, **characterized in that** the drive shaft takes a hollow form in order to form a channel for the fluid under pressure, wherein the at least one nozzle is mounted on the outer end of the drive shaft connected to the cutter head.

8. Cutter suction dredger for dislodging and recovering dredging material, comprising a device as claimed in any of the foregoing claims.

9. Method for dislodging and recovering dredging material using a device as claimed in any of the foregoing claims, **characterized in that** the diameter of the support ring of the cutter head is selected as a function of the dredging material to be recovered and the torque, wherein a smaller diameter is selected for a harder material, and that the selected cutter head is connected to the drive shaft.

10. Method as claimed in claim 9, **characterized in that** a suction mouth with a determined entry section is selected as a function of the dredging material to be recovered, wherein a smaller entry section is selected for a harder dredging material, and the selected suction mouth is connected to the suction pipe.

## AMENDED CLAIMS

[Received by the International Bureau on 18 November 2004 (18.11.04) ;  
original claims 1-10 replaced by amended claims 1-10]

1. Device for dislodging and recovering dredging material of varying nature, comprising a bearing housing, a drive shaft mounted therein for rotatingly driving with a determined torque a cutter head with a support ring, which cutter head is mountable on the drive shaft via a hub, and a suction pipe which can be connected to a suction mouth which is surrounded by a fixed cutter shield which fills the space between the rotating support ring on the one side and the suction mouth and the bearing housing on the other, characterized in that a number of cutter heads with a different support ring diameter can be mounted via the same hub on the drive shaft, wherein the support ring diameter is determined by the torque and the nature of the dredging material to be recovered.

2. Device as claimed in claim 1, characterized in that a number of suction mouths with a different entry section can be connected to the suction pipe, wherein the entry section is determined by the nature of the dredging material to be recovered.

3. Device as claimed in claim 2, characterized in that the dimensions of the suction mouth are adapted such that in the operative position the bottom end fits closely between the cutter shield and the support ring of the associated cutter head.

4. Device as claimed in either of the claims 2-3, wherein the device further comprises a cutter ladder, characterized in that a number of cutter shields can be mounted on the cutter ladder which, during use of different cutter head/suction mouth combinations, allow the cutter shield to be connected on one side to the edge of the bearing housing and the suction mouth and on the other side to the

inner edge of the support ring and the front end of the cutter ladder.

5 5. Device as claimed in any of the claims 2-4, wherein the cutter shield takes the form at the bottom of a truncated cone in the direction of the cutter head, **characterized in** **that** the smaller the support ring diameter of the cutter head to be mounted, the greater is the angle of opening of the truncated cone of the cutter shield to be mounted.

10 6. Device as claimed in any of the foregoing claims, **characterized in that** at least one nozzle is provided for spraying a fluid under high pressure into the dredging material cut into by the cutter head.

15 7. Device as claimed in claim 6, **characterized in that** the drive shaft takes a hollow form in order to form a channel for the fluid under pressure, wherein the at least one nozzle is mounted on the outer end of the drive shaft connected to the cutter head.

20 8. Cutter suction dredger for dislodging and recovering dredging material, comprising a device as claimed in any of the foregoing claims.

25 9. Method for dislodging and recovering dredging material using a device as claimed in any of the foregoing claims, **characterized in that** the diameter of the support ring of the cutter head is selected as a function of the dredging material to be recovered and the torque, wherein a smaller diameter is selected for a harder material, and that the selected cutter head is connected to the drive shaft.

30 10. Method as claimed in claim 9, **characterized in that** a suction mouth with a determined entry section is selected as a function of the dredging material to be recovered, wherein a smaller entry section is selected for a harder dredging material, and the selected suction mouth is connected to the suction pipe.